

Empirical Foundation Requirements Allowed

Utah State Amendment to Section 1807 of the 2018 International Building Code.

1807.1.6.4 Empirical Concrete Foundation Design. Group R, Division 3 Occupancies three stories or less in height, and Group U Occupancies, which are constructed in accordance with Section 2308, or with other methods employing repetitive wood-frame construction or repetitive cold-formed steel structural member construction, shall be permitted to have concrete foundations constructed in accordance with Table 1807.1.6.4.

**TABLE 1807.1.6.4
EMPIRICAL FOUNDATION WALLS (1, 7, 8)**

Max Height	Top Edge Support	Min Thickness	Vertical Steel (2)	Horizontal Steel (3)	Steel at Openings (4)	Max Lintel Length	Min Lintel Depth
2' (610 mm)	None	6"	(5)	2-#4 Bars	2- #4 Bars above; 1- #4 Bar each side 1- #4 Bar below	2' (610 mm)	2" for each foot of opening width; min. 6"
3' (914 mm)	None	6"	#4 @ 32"	3- #4 Bars	2- #4 Bars above; 1- #4 Bar each side 1- #4 Bar below	2' (610 mm)	2" for each foot of opening width; min. 6"
4' (1,219 mm)	None	6"	#4 @ 32"	4- #4 Bars	2- #4 Bars above; 1- #4 Bar each side 1- #4 Bar below	3' (914 mm)	2" for each foot of opening width; min. 6"
6' (1,829 mm)	Floor or roof diaphragm (6)	8"	#4 @ 24"	5- #4 Bars	2- #4 Bars above; 1- #4 Bar each side 1- #4 Bar below	6' (1829 mm)	2" for each foot of opening width; min. 6"
8' (2,438 mm)	Floor or roof diaphragm (6)	8"	#4 @ 24"	6- #4 Bars	2- #4 Bars above; 1- #4 Bar each side 1- #4 Bar below	6' (1829 mm)	2" for each foot of opening width; min. 6"
9' (2,743 mm)	Floor or roof diaphragm (6)	8"	#4 @16"	7- #4 Bars	2- #4 Bars above; 1- #4 Bar each side 1- #4 Bar below	6' (1829 mm)	2" for each foot of opening width; min. 6"
Over 9' (2,743 mm), Engineering required for each column							

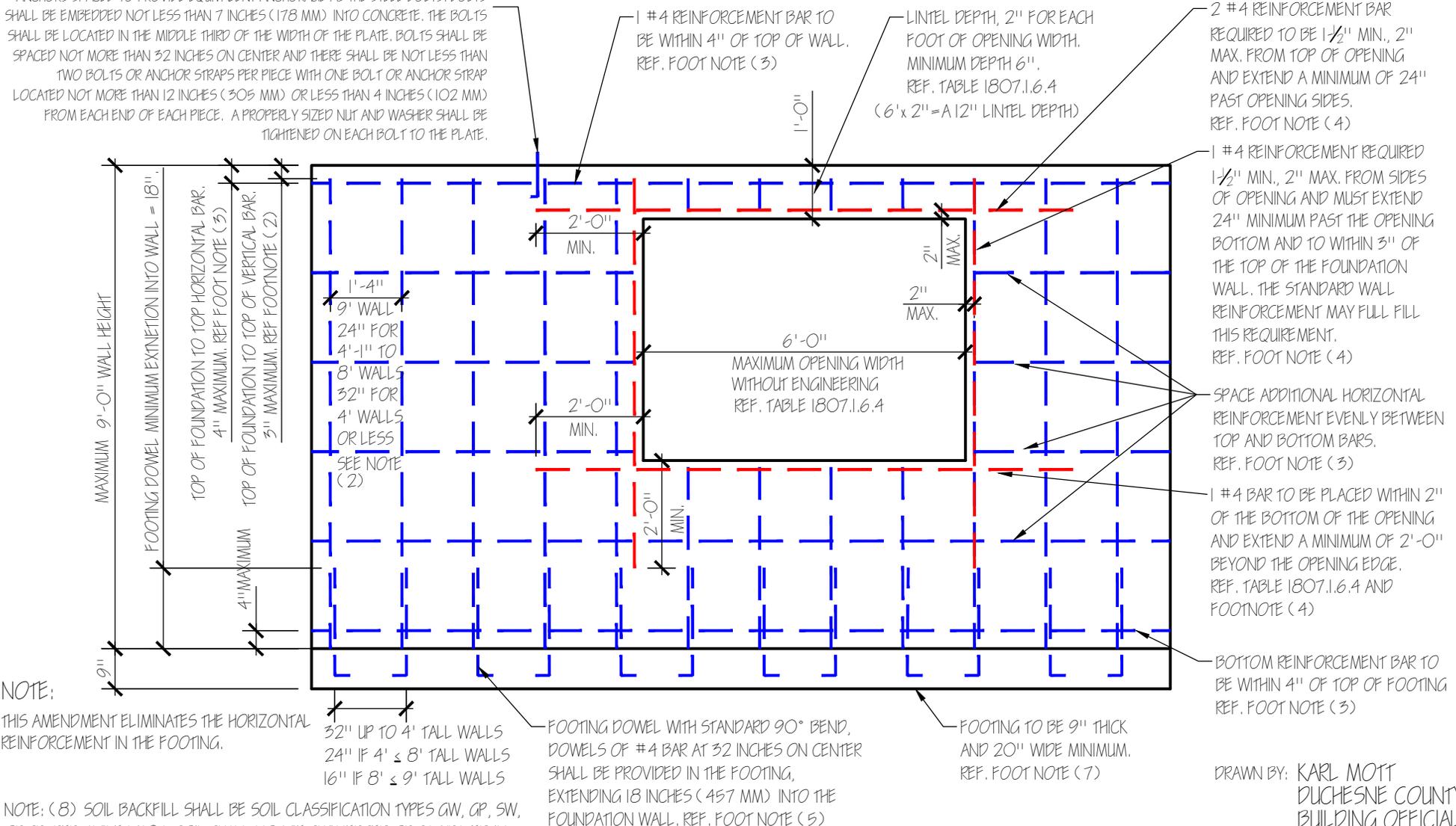
Dated July 1, 2019

Footnotes:

1. Based on 3,000 psi (20.6 Mpa) concrete and 60,000 psi (414 Mpa) reinforcing steel.
2. To be placed in the center of the wall, and extended from the footing to within three inches (76 mm) of the top of the wall; dowels of #4 bars to match vertical steel placement shall be provided in the footing, extending 24 inches (610 mm) into the foundation wall.
3. One bar shall be located in the top four inches (102 mm), one bar in the bottom four inches (102 mm) and the other bars equally spaced between. Such bar placement satisfies the requirements of Section 1805.9. Corner reinforcing shall be provided so as to lap 24 inches (610 mm).
4. Bars shall be placed within two inches (51 mm) of the openings and extend 24 inches (610 mm) beyond the edge of the opening; vertical bars may terminate three inches (76 mm) from the top of the concrete.
5. Dowels of #4 bar at 32 inches on center shall be provided in the footing, extending 18 inches (457 mm) into the foundation wall.
6. Diaphragm shall conform to the requirements of Section 2308.
7. Footing shall be a minimum of nine inches thick by 20 inches wide.
8. Soil backfill shall be soil classification types GW, GP, SW, or SP, per Table 1610.1. Soil shall not be submerged or saturated in groundwater.

ILLUSTRATION OF THE UTAH STATE AMENDMENT TABLE 1807.1.6.4 EMPIRICAL FOUNDATION DESIGN ADDED TO THE 2018 IBC AND 2015 IRC

SECTION 2308.3.1 IBC and R403.1.6 IRC WITH UTA 15A-3-110 #2
FOUNDATION PLATES OR SILLS SHALL BE BOLTED OR ANCHORED TO THE FOUNDATION WITH NOT LESS THAN 1/2-INCH-DIAMETER (12.7 MM) STEEL BOLTS OR APPROVED ANCHORS SPACED TO PROVIDE EQUIVALENT ANCHORAGE AS THE STEEL BOLTS. BOLTS SHALL BE EMBEDDED NOT LESS THAN 7 INCHES (178 MM) INTO CONCRETE. THE BOLTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE WIDTH OF THE PLATE. BOLTS SHALL BE SPACED NOT MORE THAN 32 INCHES ON CENTER AND THERE SHALL BE NOT LESS THAN TWO BOLTS OR ANCHOR STRAPS PER PIECE WITH ONE BOLT OR ANCHOR STRAP LOCATED NOT MORE THAN 12 INCHES (305 MM) OR LESS THAN 4 INCHES (102 MM) FROM EACH END OF EACH PIECE. A PROPERLY SIZED NUT AND WASHER SHALL BE TIGHTENED ON EACH BOLT TO THE PLATE.



NOTE:
THIS AMENDMENT ELIMINATES THE HORIZONTAL REINFORCEMENT IN THE FOOTING.

NOTE: (8) SOIL BACKFILL SHALL BE SOIL CLASSIFICATION TYPES GW, GP, SW, OR SP, PER TABLE 1610.1. SOIL SHALL NOT BE SUBMERGED OR SATURATED IN GROUNDWATER.

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BUILDING OFFICIAL
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